Himalayan Mountain Pastoralism

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Cow yak hybrid zomo (left) and yak (right). Photo: John Bishop.

In addressing the challenges facing mountain agricultural communities today, it is important to remember that mountain agriculture has developed hand in hand with pastoralism. Both large and small livestock sustain mountain communities, providing resources that complement those provided through agriculture. Pastoralism is not a strategy of last resort for agriculturalists pushed into marginal habitats. In fact, on the southern slopes of the Great Himalaya in Nepal, pastoralism has permitted agricultural communities to thrive and, in some cases, to extend their use of upper elevations into areas where agriculture is either marginal or impossible. A vertical look at lower, middle and upper altitude agropastoral practices provides insight into some different ways in which livestock management and cultivation interact within the larger context of mountain ecology.

Himalayan pastoralists herd one or more of the following species: sheep, goats, cattle, water buffalo, yak and yak-cattle hybrids. Livestock provide one or more of the following benefits to humans - transportation, agricultural labor, food (milk, meat, and/or blood), raw materials (wool, hair, horn), and/or manure. Livestock and their products are key elements of the diet in mountain communities. Through their labor and their manure, livestock make agricultural intensification possible in mountain environments where arable land is limited and of poor quality and growing seasons constrained. Livestock are also sources of income – their hair or wool becomes commodities that are both used by mountain residents and sold by them.

The various ways in which mountain communities combine agriculture and pastoralism is dependent, to a large extent, on ecological factors. Both livestock and crops are adapted to specific conditions that are differentially distributed. Altitude and climate interact to create zones that support different species.

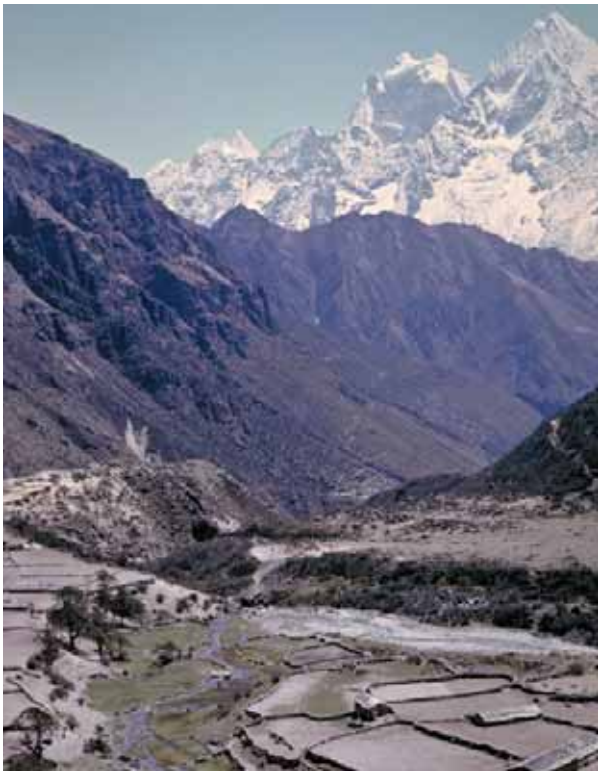
The village of Melemchigaon at 2600 metres in east-central Nepal provides an example of the gode system, in which family-owned herds of cow-yak hybrids, called zomo (Nep: chaunri), are moved through a series of pastures over the year (Bishop 1998).[1] Zomo are in the village for only one week on their way down to the low pastures around 2,010 metres where they spend the winter. In March, they begin moving up the slopes and spend the summer in pastures as high as 3,660 metres. Wheat, barley and potatoes are grown within the village while corn and potatoes are grown just below the village. All of these crops are rain-fed. This is a middle altitude strategy, found in the vertical zones between 2,010 and 3,660 metres, where these particular crops and animals can do well. Agriculture goes no higher than 2,620 metres, but herds thrive on the sub-alpine pastures on the upper slopes.

The gode system in Melemchigaon is a dairy herding system; agriculture has traditionally been secondary or alternative to managing a herd of zomo. Zomo are biologically limited to the middle altitude zone where they produce more milk and richer milk than either cows or yak. Herds are maintained to produce butter, which is used extensively for food and ritual, and sold or traded for grain. A typical zomo herd consists of 10-15 zomo and a bull, too many large animals to be pastured within the confines of the village. Dairying is a household production system; families own their own herds and their own pastures, and the family moves together with the animals. Butter production is labour-intensive requiring two adults on a daily basis. Once there are children to help out, a family might invest in a house in the village and cultivate fields there, while keeping their herd. At this altitude, fields are sown once per year and lie fallow for more than 6 months. Fertiliser comes from night soil or from pasturing village household animals (cows, water buffalo) out on the fields prior to planting. Herding families arrange their routes to be nearer to their fields when work needs to be done. It takes complex coordination to manage both agriculture and pastoralism and families opt out of one or the other periodically. Large family size insures plenty of children to help manage the crops and the animals. Moreover, marriage rules in which you select your mate from a fairly limited pool of families also results in many relatives who can be called upon to assist.

People living on the lower slopes have developed a different system that combines pastoralism and agriculture called the goth system. Described by several researchers[2], the goth system is a village-wide system that coordinates the movement of livestock to produce manure for agricultural fields. It is a form of agricultural intensification that permits greater productivity from poor mountain soils, by permitting use of fields at different altitudes, all of which are intensively fertilised by herds. At lower altitudes, intensification is possible. John Metz (Metz 1994) studied the village of Chimkhola, where they have a three-year crop rotation cycle with two crops per year on each field. Fields can be as far as several hours walk away from the village in different directions. Herds of cattle and water buffalo (with sheep and goats) are housed directly on the fields for a number of weeks prior to planting and contribute nutrients through manure and urine to improve the soil fertility. In this system, large bovids are kept in support of agriculture.

Herding requires only one member of each household to live with the herd in the portable goth structures of bamboo mats built over poles, constructed either directly on the field to be planted or adjacent to forest where the animals can graze. Metz points out that this is a tremendous year-round drain on forest resources; the wood for constructing the shelter, the fodder for maintaining the animals and the fuel wood for a duplicate household are all taken from the forests adjacent to the fields and/or village. In contrast to the middle altitude strategy of independent families moving between their own pastures, here it is necessary for the community to maintain control over the management of agriculture and livestock.

[1] *The gode system is the traditional subsistence system in this village; over the past 25 years it has been superseded by circular migration outside Nepal for wage labour, although today there are still six families who maintain herds and most village fields are planted and harvested every year.*
[2] *The Tamang of Salme in the Trisuli valley just west of Yolmo (Panter-Brick 1986) and the Pun Magar of western Nepal (Metz 1994).*



Walled fields near Thami village in 1972, Khumbu, Nepal. Photo: John Bishop.

Village leaders coordinate the movement of herds and the agricultural cycle, so that families can farm widely dispersed fields in different ecological zones. Ironically, large animal husbandry both makes the goth system possible and ultimately threatens its viability. A successful goth system uses forest resources around the fields to support the livestock, and as population pressure increases, those resources are becoming depleted.

In Khumbu, the high-elevation valley which abuts Mount Everest, Sherpa people also farm and herd bovines. Here the partial rain shadow provided by the Great Himalaya limits summer rain, permitting agriculture at higher altitudes than in Melemchi or farther west. Agriculture is limited, however, to barley, buckwheat and potatoes, at scattered fields ranging from 3,050 to 4,880 metres altitude. The growing season is short and agricultural land poor and in short supply. It is impossible to subsist on agricultural products grown locally; trade has been the major source of income in this region located along trade routes between India and Tibet. At these altitudes, pastoralism exists in support of trade and cattle breeding, not agriculture. While dung may be occasionally used in fields, at these altitudes, it is also an important source of cooking fuel since forests (and fuelwood) are in short supply. Here, female yak are maintained to produce hybrids for sale, while male yak carry loads. Herds are moved in an irregular pattern, up and down throughout the year rather than the transhumant route of the zomo, high in summer, low in winter (Brower 1991). Although female yak may be milked, they are not primarily a dairy animal. Most of the milk goes to the calves, which are raised for sale; the rest is made into butter for the family. In this most marginal habitat, fodder is grown in privately owned hayfields and stored, to supplement the natural forage.

These three patterns represent three different forms of agropastoralism found among Tibetan-derived peoples living above 1,800 metres in the Himalaya. Each meets the dual requirements of pastoralism (need for mobility and adequate resources to support large herds of animals) and agriculture (lack of mobility and intensive human labor), along with the special limitations of the particular environment. Pastoralism is a crucial component of the subsistence strategy in each locale, even as its function varies between them. In each of the three, people combine herding livestock groups with fixed agriculture, but differences in environment, culture and history result in different systems of management.

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